WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Feb 11, 2024 – 12:40 AM JST

PDB ID	:	8WPU
EMDB ID	:	EMD-37724
Title	:	Human calcium-sensing receptor(CaSR) bound to cinacalcet in complex with Gq protein
Authors	:	Ling, S.L.; Meng, X.Y.; Tian, C.L.
Deposited on	:	2023-10-10
Resolution	:	3.10 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (i)) were used in the production of this report:

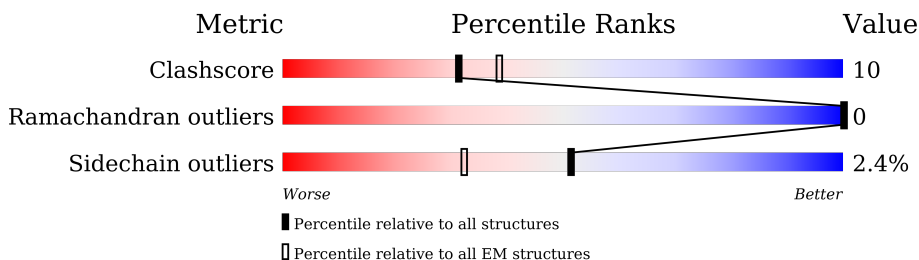|		
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		10
Ramachandran outliers		0
Sidechain outliers		2.4%

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1076	59% 16% 25%
1	B	1076	5% 58% 17% 25%
2	G	246	66% 21% 12%
3	C	376	70% 21% 9%
4	D	71	66% 11% 23%
5	E	297	57% 19% 23%
6	F	2	50% 50%
6	H	2	100%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
11	PO4	A	1109	-	-	X	-

2 Entry composition (i)

There are 12 unique types of molecules in this entry. The entry contains 18794 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Extracellular calcium-sensing receptor,calcium-sensing receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	808	Total 6178	C 4023	N 1015	O 1106	S 34	0	0
1	A	803	Total 6169	C 4013	N 1009	O 1115	S 32	0	0

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-10	MET	-	initiating methionine	UNP P41180
B	-9	LYS	-	expression tag	UNP P41180
B	-8	THR	-	expression tag	UNP P41180
B	-7	ILE	-	expression tag	UNP P41180
B	-6	ILE	-	expression tag	UNP P41180
B	-5	ALA	-	expression tag	UNP P41180
B	-4	LEU	-	expression tag	UNP P41180
B	-3	SER	-	expression tag	UNP P41180
B	-2	TYR	-	expression tag	UNP P41180
B	-1	ILE	-	expression tag	UNP P41180
B	0	PHE	-	expression tag	UNP P41180
B	1	CYS	-	expression tag	UNP P41180
B	2	LEU	-	expression tag	UNP P41180
B	3	VAL	-	expression tag	UNP P41180
B	4	PHE	-	expression tag	UNP P41180
B	5	ALA	-	expression tag	UNP P41180
B	6	ASP	-	expression tag	UNP P41180
B	7	TYR	-	expression tag	UNP P41180
B	8	LYS	-	expression tag	UNP P41180
B	9	ASP	-	expression tag	UNP P41180
B	10	ASP	-	expression tag	UNP P41180
B	11	ASP	-	expression tag	UNP P41180
B	12	ASP	-	expression tag	UNP P41180
B	13	GLU	-	expression tag	UNP P41180
B	14	ASN	-	expression tag	UNP P41180
B	15	LEU	-	expression tag	UNP P41180

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Chain	Residue	Modelled	Actual	Comment	Reference
B	16	TYR	-	expression tag	UNP P41180
B	17	PHE	-	expression tag	UNP P41180
B	18	GLN	-	expression tag	UNP P41180
B	19	GLY	-	expression tag	UNP P41180
A	-10	MET	-	initiating methionine	UNP P41180
A	-9	LYS	-	expression tag	UNP P41180
A	-8	THR	-	expression tag	UNP P41180
A	-7	ILE	-	expression tag	UNP P41180
A	-6	ILE	-	expression tag	UNP P41180
A	-5	ALA	-	expression tag	UNP P41180
A	-4	LEU	-	expression tag	UNP P41180
A	-3	SER	-	expression tag	UNP P41180
A	-2	TYR	-	expression tag	UNP P41180
A	-1	ILE	-	expression tag	UNP P41180
A	0	PHE	-	expression tag	UNP P41180
A	1	CYS	-	expression tag	UNP P41180
A	2	LEU	-	expression tag	UNP P41180
A	3	VAL	-	expression tag	UNP P41180
A	4	PHE	-	expression tag	UNP P41180
A	5	ALA	-	expression tag	UNP P41180
A	6	ASP	-	expression tag	UNP P41180
A	7	TYR	-	expression tag	UNP P41180
A	8	LYS	-	expression tag	UNP P41180
A	9	ASP	-	expression tag	UNP P41180
A	10	ASP	-	expression tag	UNP P41180
A	11	ASP	-	expression tag	UNP P41180
A	12	ASP	-	expression tag	UNP P41180
A	13	GLU	-	expression tag	UNP P41180
A	14	ASN	-	expression tag	UNP P41180
A	15	LEU	-	expression tag	UNP P41180
A	16	TYR	-	expression tag	UNP P41180
A	17	PHE	-	expression tag	UNP P41180
A	18	GLN	-	expression tag	UNP P41180
A	19	GLY	-	expression tag	UNP P41180

- Molecule 2 is a protein called G subunit q (Gi2-mini-Gq chimeric).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	G	217	1619	1036	290	286	7	0	0

- Molecule 3 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	341	2523	1563	451	490	19	0	0

There are 37 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-9	HIS	-	expression tag	UNP P62873
C	-8	HIS	-	expression tag	UNP P62873
C	-7	HIS	-	expression tag	UNP P62873
C	-6	HIS	-	expression tag	UNP P62873
C	-5	HIS	-	expression tag	UNP P62873
C	-4	HIS	-	expression tag	UNP P62873
C	-3	GLY	-	expression tag	UNP P62873
C	-2	SER	-	expression tag	UNP P62873
C	-1	LEU	-	expression tag	UNP P62873
C	0	LEU	-	expression tag	UNP P62873
C	1	GLN	-	expression tag	UNP P62873
C	341	GLY	-	expression tag	UNP P62873
C	342	SER	-	expression tag	UNP P62873
C	343	SER	-	expression tag	UNP P62873
C	344	GLY	-	expression tag	UNP P62873
C	345	GLY	-	expression tag	UNP P62873
C	346	GLY	-	expression tag	UNP P62873
C	347	GLY	-	expression tag	UNP P62873
C	348	SER	-	expression tag	UNP P62873
C	349	GLY	-	expression tag	UNP P62873
C	350	GLY	-	expression tag	UNP P62873
C	351	GLY	-	expression tag	UNP P62873
C	352	GLY	-	expression tag	UNP P62873
C	353	SER	-	expression tag	UNP P62873
C	354	SER	-	expression tag	UNP P62873
C	355	GLY	-	expression tag	UNP P62873
C	356	VAL	-	expression tag	UNP P62873
C	357	SER	-	expression tag	UNP P62873
C	358	GLY	-	expression tag	UNP P62873
C	359	TRP	-	expression tag	UNP P62873
C	360	ARG	-	expression tag	UNP P62873
C	361	LEU	-	expression tag	UNP P62873
C	362	PHE	-	expression tag	UNP P62873
C	363	LYS	-	expression tag	UNP P62873
C	364	LYS	-	expression tag	UNP P62873
C	365	ILE	-	expression tag	UNP P62873
C	366	SER	-	expression tag	UNP P62873

- Molecule 4 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	55	Total 356	C 223	N 65	O 66	S 2	0	0

- Molecule 5 is a protein called ScFv16.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	229	Total 1643	C 1052	N 275	O 309	S 7	0	0

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	F	2	Total 28	C 16	N 2	O 10	0	0
6	H	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).
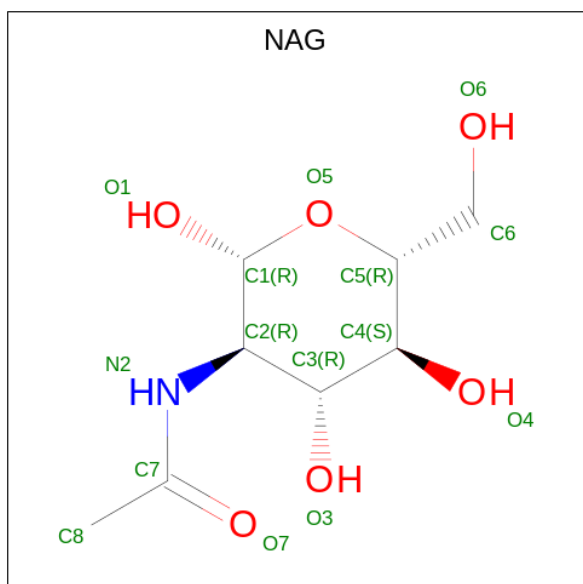
Mol	Chain	Residues	Atoms				AltConf
7	B	1	Total 14	C 8	N 1	O 5	0
7	B	1	Total 14	C 8	N 1	O 5	0
7	B	1	Total 14	C 8	N 1	O 5	0
7	B	1	Total 14	C 8	N 1	O 5	0
7	A	1	Total 14	C 8	N 1	O 5	0
7	A	1	Total 14	C 8	N 1	O 5	0
7	A	1	Total 14	C 8	N 1	O 5	0
7	A	1	Total 14	C 8	N 1	O 5	0
7	A	1	Total 14	C 8	N 1	O 5	0

- Molecule 8 is N-[(1R)-1-(naphthalen-1-yl)ethyl]-3-[3-(trifluoromethyl)phenyl]propan-1-amine (three-letter code: YP4) (formula: $C_{22}H_{22}F_3N$) (labeled as "Ligand of Interest" by depositor).
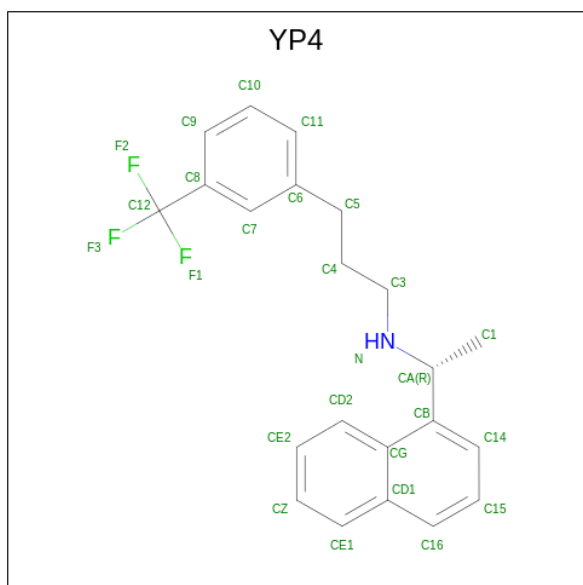
Mol	Chain	Residues	Atoms				AltConf
8	B	1	Total 26	C 22	F 3	N 1	0
8	A	1	Total 26	C 22	F 3	N 1	0

- Molecule 9 is TRYPTOPHAN (three-letter code: TRP) (formula: $C_{11}H_{12}N_2O_2$).
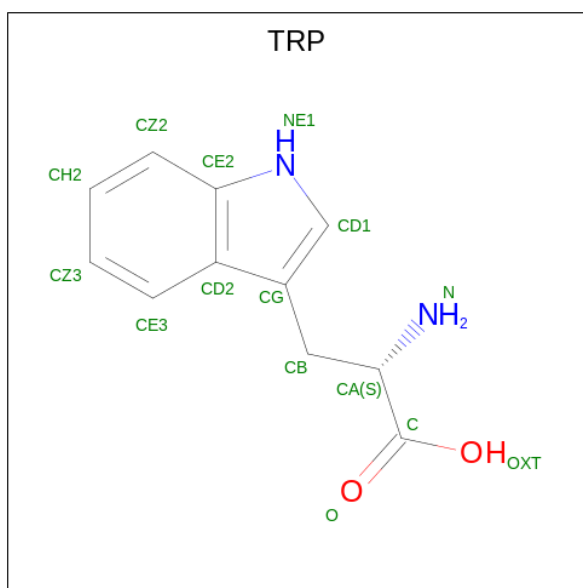
Mol	Chain	Residues	Atoms				AltConf
9	B	1	Total	C	N	O	0
			15	11	2	2	
9	A	1	Total	C	N	O	0
			15	11	2	2	

- Molecule 10 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
10	B	2	Total	Ca	0
			2	2	
10	A	2	Total	Ca	0
			2	2	

- Molecule 11 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
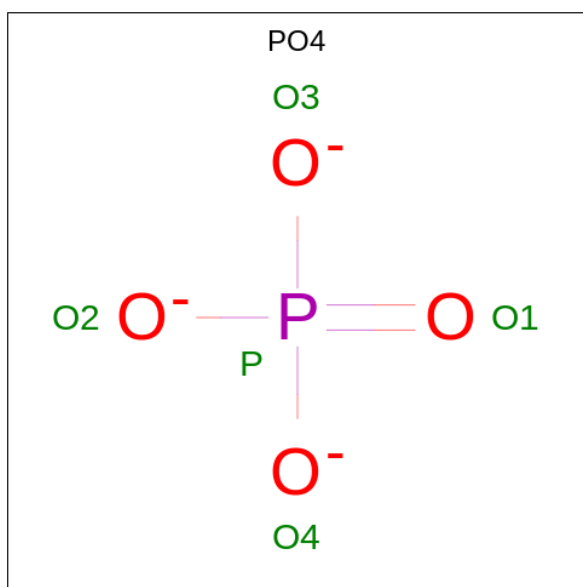
Mol	Chain	Residues	Atoms			AltConf
11	B	1	Total 5	O 4	P 1	0
11	A	1	Total 5	O 4	P 1	0

- Molecule 12 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).
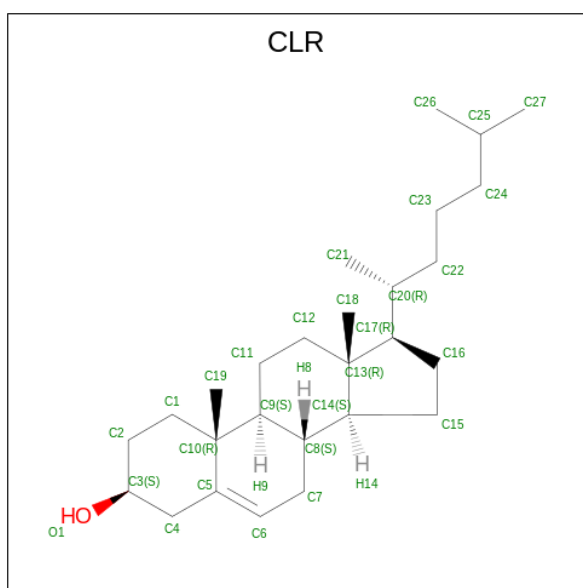
Mol	Chain	Residues	Atoms			AltConf
12	B	1	Total 28	C 27	O 1	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Extracellular calcium-sensing receptor,calcium-sensing receptor

Chain B:

THR PRO ASN MET LEU ASN TYR PHE GLY ARG GLY PRO TYR GLU GLY ILE ALA VAL PHE ASP GLY LYS LYS ILE ILE THR VAL THR GLY THR LEU TRP ASN GLY ASN LYS ILE ILE ASP GLU ARG LEU ILE THR PRO ASP GLY SER MET LEU PHE ARG VAL THR ILE ASN SER
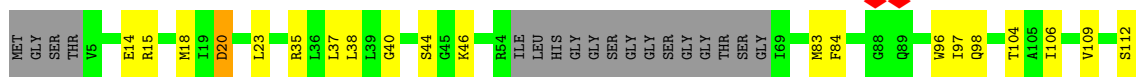
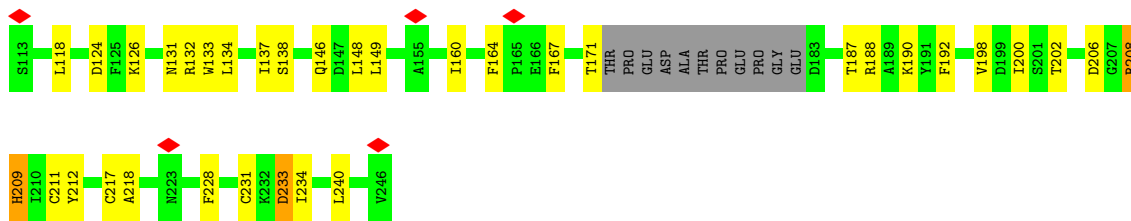• Molecule 1: Extracellular calcium-sensing receptor,calcium-sensing receptor

Chain A:

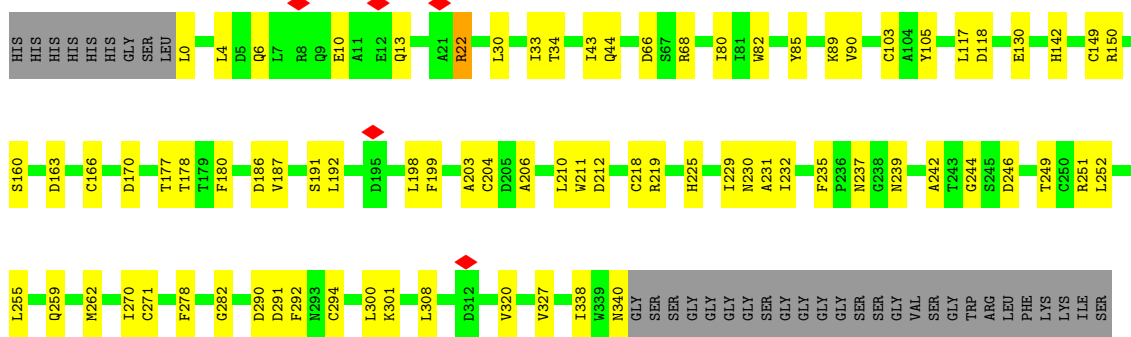   59%   16%   25%

MET LYS THR ILE ILE ALA LEU SER TYR ILE PHE CYS LEU VAL PHE ALA ASP TYR LYS ASP ASP ASP GLU ASN LEU TYR PHE GLN GLY Y20 R25 I32 P39 I40 H41 F42 A46 K47 D48 R54 C60 R66 G67 F68 R69 F76 E80 I81 R96

L108 E109 S113 N118 K119 I120 N124 L125 D126 GLU PHE CYS ASN C131 S132 E133 H134 G146 I162 V165 K177 F183 L184 R185 T186 I200 I201 R205 W206 N207 W208 V209 I223 E224 R227 A230 I235 C236 I237 E241 I252 Q253 H254

V255 V258 I259 D275 L276 L279 I280 I283 V284 R285 N287 I288 W299 S302 S303 L304 I305 Y310 V314 G325 F333 S342 Q361 GLU GLY ALA LYS SER GLY PRO LEU PRO VAL ASP THR PHE LEU ARG GLY HIS GLU GLU SER GLY ASP ARG PHE SER

ASN SER SER THR ALA PHE R392 E399 T406 P407 Y408 I416 S417 Y418 N419 V420 Y421 L422 Y425 L431 Y435 T436 C437 R441 N446 C449 A450 D451 I452 K453 K454 V455 E456 A457 Y489 S490 I491 I492 L496 S497 P498 F505 Y511 Y514 F539

S540 N541 D545 T550 R551 I554 I555 E556 G557 E558 P559 C562 C565 V566 P569 D570 G571 E572 D575 K584 C585 P586 D587 D588 F589 W590 S591 A600 K601 E602 I603 E604 F612 G613 I614 L618 G623 L626 T627 A628 F629 V630 L631 I635 K636 F637

N647 R648 E649 L650 L655 L658 F662 S665 I669 P672 Q673 D674 W675 R678 I686 S687 F688 V689 I692 S693 E707 A708 K709 ILE PRO THR SER PHE HIS ARG LYS TRP W719 G720 L721 N722 L723 Q724 T732 F733 M734 Q735 I736 P747 P748 S749 S750

Y751 R752 N753 Q754 E755 L756 E757 D758 E759 I760 I761 F762 E767 L782 I786 C787 F788 S794 R795 K796 N800 F801 N802 F809 P823 A835 V838 I839 L848 L849 A850 F854 S865 ARG ASN THR ILE GLU GLU VAL ARG CYS SER THR ALA ALA HIS ALA

PHE LYS VAL ALA ALA ARG ALA THR LEU ARG ARG SER GLY SER SER GLY GLY GLY SER GLY GLY GLY SER SER SER GLY VAL PHE THR LEU GLU GLU ASP PHE VAL GLY ASP TRP GLU GLN THR ALA ALA TYR ASN LEU ASP GLN VAL LEU GLU GLN GLY GLY VAL SER SER LEU LEU GLN

ASN LEU ALA VAL SER VAL THR PRO ILE LEU ARG GLN ILE ARG ILE ARG SER GLY GLU ASN ALA LEU LYS ILE ASP ILE HIS VAL ILE ILE PRO TYR GLU GLY LEU SER ALA ASP GLN MET ALA GLN ILE GLU GLU VAL PHE LYS VAL VAL TYR PRO VAL ASP ASP HIS HIS PHE LYS VAL ILE LEU

PRO TYR GLY THR LEU VAL ILE ASP GLY VAL THR PRO ASN MET LEU ASN TYR PHE GLY ARG PRO TYR GLU GLY ILE ALA VAL PHE ASP GLY LYS LYS ILE ILE THR VAL THR GLY THR LEU TRP ASN GLY ASN LYS ILE ILE ASP GLU ARG LEU ILE THR PRO ASP GLY SER MET LEU PHE ARG

VAL THR ILE ASN SER

• Molecule 2: G subunit q (Gi2-mini-Gq chimeric)

Chain G:

             66%   21%   •   12%

MET GLY SER THR V5 E14 R15 M18 I19 D20 L23 R35 L36 L37 L38 L39 G40 S44 G45 K46 R54 ILE LEU HIS GLY SER GLY SER GLY SER GLY THR SER GLY I69 M83 F84 G88 Q89 W96 I97 Q98 T104 A105 I106 V109 S112
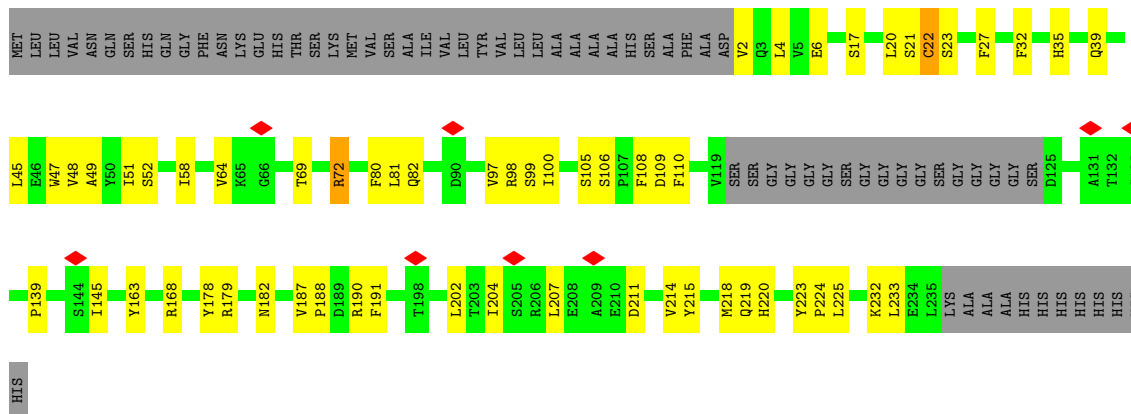
• Molecule 3: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1

Chain C:

70%   21%   9%

• Molecule 4: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2

Chain D:

66%   11%   23%

• Molecule 5: ScFv16

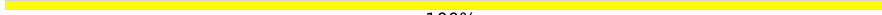Chain E:

57%   19%   23%

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain F: 50%   50%

NAG1 NAG2

• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc opyranose

Chain H: 100%

NAG1 NAG2

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	239610	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1700	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.892	Depositor
Minimum map value	-0.308	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.041	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	428.00003, 430.14, 483.64	wwPDB
Map dimensions	400, 402, 452	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, PO4, CA, YP4, CLR

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.28	0/6326	0.45	0/8613
1	B	0.28	0/6338	0.48	0/8634
2	G	0.25	0/1646	0.53	1/2230 (0.0%)
3	C	0.27	0/2570	0.52	0/3500
4	D	0.26	0/362	0.43	0/499
5	E	0.28	0/1687	0.53	0/2302
All	All	0.28	0/18929	0.48	1/25778 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	124	ASP	CB-CG-OD2	5.75	123.47	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	6169	0	5895	114	0
1	B	6178	0	5880	125	0
2	G	1619	0	1517	33	0
3	C	2523	0	2341	50	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	356	0	308	4	0
5	E	1643	0	1464	33	0
6	F	28	0	25	1	0
6	H	28	0	25	4	0
7	A	70	0	65	1	0
7	B	56	0	52	0	0
8	A	26	0	0	0	0
8	B	26	0	0	0	0
9	A	15	0	9	1	0
9	B	15	0	9	0	0
10	A	2	0	0	0	0
10	B	2	0	0	0	0
11	A	5	0	0	2	0
11	B	5	0	0	0	0
12	B	28	0	46	2	0
All	All	18794	0	17636	350	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

All (350) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:65:PHE:O	1:B:69:ARG:HG3	1.84	0.78
1:A:603:ILE:HA	1:A:761:ILE:HG23	1.72	0.72
1:B:69:ARG:HH22	1:B:411:TYR:CB	2.03	0.72
1:A:589:PHE:HA	1:A:600:ALA:HA	1.74	0.70
1:B:69:ARG:NH2	1:B:411:TYR:HB3	2.07	0.69
1:A:177:LYS:NZ	1:A:183:PHE:O	2.26	0.69
1:B:603:ILE:HG23	1:B:763:ILE:HD11	1.74	0.69
1:B:69:ARG:NH2	1:B:411:TYR:CB	2.56	0.69
1:A:795:ARG:HG3	1:A:796:LYS:CD	2.24	0.68
1:B:69:ARG:NH2	1:B:411:TYR:CG	2.63	0.66
1:A:795:ARG:HG3	1:A:796:LYS:HD2	1.79	0.65
1:A:794:SER:O	1:A:802:ASN:ND2	2.29	0.65
1:A:795:ARG:HG3	1:A:796:LYS:HG2	1.77	0.65
1:A:69:ARG:NH2	11:A:1109:PO4:O2	2.30	0.65
1:B:69:ARG:HD2	1:B:407:PRO:O	1.98	0.64
1:A:550:THR:HG21	1:A:565:CYS:HB3	1.81	0.63
2:G:131:ASN:HB3	2:G:134:LEU:HB2	1.81	0.63
1:A:570:ASP:O	1:A:591:SER:OG	2.16	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:514:TYR:HE2	7:A:1104:NAG:HN2	1.48	0.62
5:E:99:SER:HB3	5:E:108:PHE:H	1.63	0.62
1:B:489:TYR:HB2	1:B:511:TYR:HB3	1.81	0.62
1:B:177:LYS:NZ	1:B:183:PHE:O	2.32	0.61
1:B:852:ILE:HG22	1:B:853:PHE:CD1	2.36	0.61
1:B:737:VAL:O	1:B:741:ILE:HG23	2.01	0.61
1:A:631:LEU:O	1:A:635:ILE:HG13	2.01	0.61
1:B:229:GLU:OE1	1:B:233:ARG:NH1	2.35	0.60
1:A:795:ARG:CG	1:A:796:LYS:HG2	2.31	0.60
2:G:15:ARG:NH1	3:C:90:VAL:O	2.34	0.60
1:B:139:ILE:HD12	1:B:460:VAL:HG21	1.83	0.60
5:E:2:VAL:HG11	5:E:98:ARG:HH21	1.67	0.59
1:A:96:ARG:NH2	1:A:113:SER:OG	2.35	0.59
1:A:603:ILE:HG22	1:A:604:GLU:N	2.18	0.59
1:A:755:GLU:OE1	1:A:755:GLU:N	2.36	0.59
1:A:835:ALA:O	1:A:839:ILE:HG22	2.03	0.58
1:B:69:ARG:NH2	1:B:411:TYR:CD2	2.70	0.58
1:B:732:THR:O	1:B:736:ILE:HG12	2.04	0.58
1:A:200:ILE:HD11	1:A:491:ILE:HD13	1.84	0.58
5:E:105:SER:O	5:E:179:ARG:NH2	2.36	0.58
1:A:795:ARG:HG3	1:A:796:LYS:CG	2.32	0.58
1:B:22:PRO:O	1:B:25:ARG:NH2	2.36	0.58
1:B:66:ARG:HA	1:B:69:ARG:HD3	1.86	0.58
1:A:658:LEU:HD21	1:A:848:LEU:HD23	1.85	0.58
2:G:44:SER:HB3	2:G:109:VAL:HG12	1.86	0.57
3:C:10:GLU:HA	3:C:13:GLN:HG3	1.85	0.57
3:C:68:ARG:HG3	3:C:85:TYR:CD1	2.40	0.57
5:E:6:GLU:N	5:E:6:GLU:OE1	2.38	0.57
1:A:614:ILE:O	1:A:618:LEU:HG	2.04	0.57
5:E:187:VAL:HG12	5:E:191:PHE:HD2	1.70	0.57
1:B:299:TRP:HA	1:B:302:SER:HB2	1.86	0.57
1:B:621:VAL:HA	1:B:624:ILE:HD12	1.87	0.57
1:A:66:ARG:HG3	1:A:69:ARG:HH21	1.69	0.57
1:A:201:ILE:HD13	1:A:209:VAL:HG11	1.87	0.57
1:B:733:PHE:O	1:B:737:VAL:HG22	2.05	0.56
1:B:205:ARG:HB3	6:F:1:NAG:H3	1.87	0.56
1:B:443:LEU:HD23	1:B:443:LEU:H	1.70	0.56
1:B:602:GLU:CB	1:B:760:ILE:HD12	2.36	0.56
1:B:693:SER:HB3	1:B:783:LEU:HD21	1.86	0.56
1:B:349:LYS:HD3	1:B:349:LYS:N	2.21	0.56
1:B:751:TYR:HB2	1:B:766:HIS:HB2	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:649:GLU:OE2	1:A:724:GLN:NE2	2.39	0.56
1:B:832:PHE:HB3	1:A:823:PRO:HB3	1.87	0.56
1:B:852:ILE:HG22	1:B:853:PHE:HD1	1.69	0.55
5:E:52:SER:O	5:E:72:ARG:NH1	2.40	0.55
2:G:146:GLN:HA	2:G:149:LEU:HG	1.87	0.55
2:G:217:CYS:SG	2:G:218:ALA:N	2.80	0.55
2:G:126:LYS:HE2	2:G:200:ILE:HG12	1.87	0.55
3:C:160:SER:HG	3:C:166:CYS:HG	1.55	0.55
5:E:39:GLN:HB2	5:E:45:LEU:HD23	1.88	0.55
1:A:42:PHE:CZ	1:A:304:LEU:HD11	2.42	0.55
3:C:198:LEU:HD23	3:C:212:ASP:HA	1.89	0.55
1:B:96:ARG:HH21	1:B:136:PRO:HG3	1.70	0.55
2:G:35:ARG:HG2	2:G:84:PHE:HE2	1.72	0.55
1:B:686:ILE:HA	1:B:735:GLN:OE1	2.06	0.55
1:B:700:ASN:HA	1:B:703:LEU:HD23	1.89	0.55
5:E:163:TYR:HB2	5:E:218:MET:HG2	1.89	0.55
1:B:44:VAL:HA	1:B:60:CYS:HA	1.88	0.55
1:B:283:ILE:HG23	1:B:288:ILE:HB	1.89	0.54
5:E:219:GLN:NE2	5:E:224:PRO:O	2.40	0.54
2:G:228:PHE:HA	2:G:231:CYS:SG	2.47	0.54
3:C:118:ASP:OD1	3:C:118:ASP:N	2.37	0.54
1:A:673:GLN:OE1	1:A:675:TRP:NE1	2.36	0.54
3:C:235:PHE:HD1	3:C:237:ASN:H	1.56	0.54
1:B:420:VAL:O	1:B:424:VAL:HG12	2.08	0.54
5:E:32:PHE:CD1	5:E:100:ILE:HB	2.42	0.54
5:E:20:LEU:O	5:E:81:LEU:N	2.39	0.54
1:B:69:ARG:HH22	1:B:411:TYR:HB3	1.70	0.54
1:A:558:GLU:HG2	1:A:562:CYS:HB2	1.90	0.54
5:E:98:ARG:NH1	5:E:109:ASP:OD2	2.40	0.53
5:E:188:PRO:HB2	5:E:190:ARG:HG2	1.90	0.53
1:A:669:ILE:HG23	1:A:838:VAL:HG21	1.89	0.53
1:A:603:ILE:HA	1:A:761:ILE:CG2	2.39	0.53
1:B:603:ILE:HG23	1:B:763:ILE:CD1	2.37	0.53
1:A:733:PHE:HA	1:A:736:ILE:HG22	1.90	0.53
1:A:283:ILE:HG23	1:A:288:ILE:HB	1.90	0.53
1:B:675:TRP:HA	1:B:678:ARG:HD3	1.91	0.53
5:E:220:HIS:HA	5:E:225:LEU:HD22	1.90	0.53
3:C:230:ASN:HD21	3:C:246:ASP:HB3	1.73	0.52
1:A:539:PHE:CE1	1:A:541:ASN:HB2	2.44	0.52
1:A:558:GLU:HG3	1:A:559:PRO:HD2	1.91	0.52
2:G:212:TYR:OH	2:G:233:ASP:OD2	2.20	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:191:SER:HB2	3:C:232:ILE:HG23	1.92	0.52
1:B:201:ILE:HG23	1:B:206:TRP:HB2	1.92	0.52
1:B:589:PHE:HA	1:B:600:ALA:HA	1.92	0.52
1:A:253:GLN:OE1	1:A:286:ARG:NH2	2.43	0.52
1:B:445:THR:OG1	1:B:446:ASN:N	2.42	0.52
1:B:742:TRP:HZ2	1:B:767:GLU:HB3	1.75	0.52
1:A:224:GLU:OE2	1:A:227:ARG:NH2	2.35	0.52
1:B:206:TRP:CD1	1:B:540:SER:HB3	2.46	0.51
1:A:342:SER:O	1:A:342:SER:OG	2.28	0.51
2:G:231:CYS:HA	2:G:234:ILE:HD12	1.92	0.51
2:G:37:LEU:HB3	2:G:106:ILE:HG22	1.92	0.51
5:E:35:HIS:HB2	5:E:97:VAL:HG13	1.92	0.51
1:B:197:MET:HG2	1:B:320:PHE:HE2	1.75	0.51
1:A:284:VAL:HG21	1:A:310:TYR:CD1	2.46	0.51
2:G:96:TRP:HB2	3:C:117:LEU:HD21	1.93	0.51
1:A:752:ARG:HG3	1:A:752:ARG:HH11	1.76	0.51
1:B:427:ILE:HD13	1:B:464:LEU:HD11	1.91	0.51
1:A:435:TYR:HD1	1:A:452:ILE:HG13	1.76	0.51
1:A:753:ASN:N	1:A:762:PHE:O	2.38	0.51
1:B:603:ILE:HG22	1:B:603:ILE:O	2.11	0.51
2:G:206:ASP:H	2:G:208:ARG:HH21	1.59	0.51
1:A:689:VAL:HG13	1:A:732:THR:HG23	1.91	0.51
5:E:214:VAL:HB	5:E:232:LYS:HB2	1.92	0.51
1:B:412:THR:O	1:B:413:HIS:ND1	2.43	0.50
5:E:35:HIS:NE2	5:E:223:TYR:OH	2.42	0.50
1:A:255:VAL:O	1:A:259:ILE:HG13	2.11	0.50
3:C:271:CYS:HB3	3:C:290:ASP:HB3	1.93	0.50
1:A:688:PHE:O	1:A:692:ILE:HG12	2.11	0.50
2:G:171:THR:HA	2:G:188:ARG:HG2	1.93	0.50
1:B:50:ASP:OD1	1:B:50:ASP:N	2.41	0.50
1:B:313:VAL:HG12	1:B:314:VAL:HG13	1.93	0.50
1:A:207:ASN:ND2	6:H:1:NAG:O5	2.45	0.50
3:C:187:VAL:HA	3:C:203:ALA:HA	1.93	0.50
1:B:735:GLN:HB2	1:B:779:TYR:HE2	1.75	0.50
1:A:801:PHE:HE1	2:G:240:LEU:HD21	1.75	0.50
2:G:198:VAL:O	2:G:202:THR:HG23	2.12	0.49
3:C:22:ARG:HG2	3:C:259:GLN:HG2	1.94	0.49
3:C:206:ALA:HA	3:C:229:ILE:HD11	1.94	0.49
1:B:408:TYR:CD2	1:B:409:ILE:HG23	2.47	0.49
1:A:406:THR:O	1:A:408:TYR:N	2.42	0.49
1:A:602:GLU:O	1:A:761:ILE:HG22	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:767:GLU:OE1	1:A:767:GLU:N	2.45	0.49
2:G:126:LYS:HG3	2:G:200:ILE:HG23	1.95	0.48
2:G:98:GLN:HG3	2:G:133:TRP:CE2	2.48	0.48
1:B:548:ALA:O	1:B:574:SER:OG	2.20	0.48
1:A:80:GLU:OE2	1:A:425:TYR:OH	2.28	0.48
2:G:20:ASP:OD2	3:C:89:LYS:NZ	2.47	0.48
3:C:192:LEU:HD23	3:C:199:PHE:HB3	1.95	0.48
1:A:206:TRP:CD1	1:A:540:SER:HB3	2.48	0.48
1:B:696:LEU:HD13	1:B:787:CYS:HA	1.96	0.48
1:A:162:ILE:HA	1:A:457:ALA:HB1	1.95	0.48
12:B:1110:CLR:H25	12:B:1110:CLR:H211	1.96	0.48
1:A:850:ALA:O	1:A:854:PHE:HB2	2.14	0.48
5:E:139:PRO:HA	5:E:207:LEU:HD11	1.96	0.48
1:A:630:VAL:HG12	1:A:655:LEU:HD11	1.96	0.48
3:C:149:CYS:O	3:C:150:ARG:NE	2.47	0.47
1:B:166:SER:O	1:B:186:THR:OG1	2.31	0.47
1:A:603:ILE:CG2	1:A:604:GLU:N	2.76	0.47
1:A:794:SER:O	1:A:794:SER:OG	2.22	0.47
1:A:241:GLU:HG3	1:A:258:VAL:HG11	1.96	0.47
3:C:180:PHE:HB3	3:C:211:TRP:CE3	2.49	0.47
1:B:331:ARG:NH1	1:B:409:ILE:O	2.35	0.47
1:A:252:ILE:HD11	1:A:279:LEU:HA	1.95	0.47
1:A:754:GLN:HB3	1:A:761:ILE:HD13	1.96	0.47
2:G:138:SER:HA	2:G:209:HIS:HB2	1.97	0.47
5:E:32:PHE:CE1	5:E:98:ARG:HD3	2.50	0.47
1:A:325:GLY:HA3	1:A:418:TYR:CG	2.50	0.47
1:B:614:ILE:HG13	1:B:615:ALA:N	2.30	0.47
1:A:205:ARG:HB3	6:H:1:NAG:H3	1.96	0.47
5:E:48:VAL:HG23	5:E:64:VAL:HG21	1.97	0.47
1:A:672:PRO:O	1:A:750:SER:OG	2.30	0.47
1:A:748:PRO:HB3	1:A:767:GLU:HA	1.97	0.47
1:B:742:TRP:CD1	1:B:772:ALA:HB3	2.50	0.46
1:A:492:ILE:HD12	1:A:505:PHE:HB3	1.97	0.46
4:D:11:GLN:O	4:D:15:LEU:N	2.47	0.46
1:B:452:ILE:HG23	1:B:453:LYS:HD3	1.95	0.46
1:A:276:LEU:HD23	1:A:305:ILE:HD13	1.98	0.46
1:B:171:SER:O	1:B:185:ARG:NH1	2.47	0.46
1:B:351:PHE:O	1:B:355:THR:HG22	2.16	0.46
1:A:299:TRP:HA	1:A:302:SER:HB2	1.97	0.46
2:G:112:SER:HA	2:G:118:LEU:HD21	1.97	0.46
1:B:635:ILE:O	1:B:638:ARG:NE	2.41	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:278:PHE:O	3:C:320:VAL:HG11	2.16	0.46
1:A:539:PHE:CZ	1:A:541:ASN:HB2	2.51	0.46
3:C:0:LEU:HA	3:C:4:LEU:HD22	1.97	0.46
5:E:106:SER:O	5:E:106:SER:OG	2.29	0.46
3:C:231:ALA:HB3	3:C:244:GLY:HA3	1.98	0.46
1:B:732:THR:HG22	1:B:736:ILE:HD11	1.98	0.46
3:C:338:ILE:HG21	4:D:61:PHE:CE2	2.51	0.46
1:B:65:PHE:HB3	1:B:408:TYR:HB2	1.97	0.46
1:B:223:ILE:HD12	1:B:223:ILE:HA	1.80	0.46
1:B:589:PHE:HB3	1:B:598:CYS:SG	2.55	0.45
1:B:657:SER:HB2	1:B:690:LEU:HD23	1.98	0.45
1:A:227:ARG:HG3	1:A:237:ILE:HD12	1.98	0.45
3:C:34:THR:HB	3:C:300:LEU:HB3	1.98	0.45
5:E:178:TYR:O	5:E:182:ASN:HB2	2.16	0.45
3:C:82:TRP:CH2	3:C:89:LYS:HE3	2.52	0.45
1:B:197:MET:HG2	1:B:320:PHE:CE2	2.50	0.45
3:C:0:LEU:HA	3:C:4:LEU:HB2	1.98	0.45
3:C:219:ARG:HG3	3:C:219:ARG:HH11	1.82	0.45
3:C:170:ASP:OD1	3:C:170:ASP:N	2.48	0.45
6:H:1:NAG:H62	6:H:2:NAG:HN2	1.81	0.45
1:A:66:ARG:NH2	11:A:1109:PO4:O3	2.49	0.45
3:C:6:GLN:O	3:C:10:GLU:HG3	2.16	0.45
3:C:210:LEU:HD22	3:C:255:LEU:HG	1.98	0.45
1:B:69:ARG:CG	1:B:408:TYR:HA	2.47	0.45
1:A:416:ILE:O	1:A:420:VAL:HG23	2.16	0.45
1:A:569:PRO:HG2	1:A:572:GLU:HG3	1.99	0.45
1:A:283:ILE:HD12	1:A:288:ILE:HD12	1.98	0.45
2:G:167:PHE:HA	2:G:192:PHE:CE1	2.52	0.45
3:C:166:CYS:SG	3:C:187:VAL:HG11	2.57	0.45
1:B:527:LYS:HE2	1:B:527:LYS:HB3	1.81	0.45
1:A:623:GLY:HA3	1:A:662:PHE:HE2	1.82	0.45
1:B:159:LEU:HD21	1:A:108:LEU:HB3	1.99	0.45
1:A:636:LYS:HE2	1:A:637:PHE:HE1	1.80	0.45
1:B:737:VAL:O	1:B:740:VAL:HG12	2.16	0.44
1:B:416:ILE:O	1:B:420:VAL:HG23	2.17	0.44
1:B:677:CYS:HB3	1:B:765:CYS:HB3	1.82	0.44
1:A:76:PHE:HB2	1:A:333:PHE:CD2	2.52	0.44
1:B:76:PHE:HB2	1:B:333:PHE:CD2	2.53	0.44
1:B:539:PHE:CZ	1:B:541:ASN:HB2	2.52	0.44
1:A:32:ILE:HG21	1:A:431:LEU:HD11	1.99	0.44
2:G:160:ILE:HG22	2:G:164:PHE:HD2	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:130:GLU:OE1	5:E:27:PHE:HA	2.18	0.44
1:B:78:ILE:HG13	1:B:424:VAL:HG21	2.00	0.44
1:A:20:TYR:HB2	1:A:25:ARG:HH22	1.82	0.44
1:B:594:ASN:HB2	1:B:596:THR:HG23	1.99	0.44
1:B:631:LEU:HA	1:B:655:LEU:HD13	2.00	0.44
1:A:230:ALA:HB1	1:A:235:ILE:HB	1.99	0.44
2:G:134:LEU:HD22	2:G:137:ILE:HG21	1.99	0.44
3:C:294:CYS:HB3	3:C:308:LEU:HB2	1.99	0.44
1:B:682:PRO:O	1:B:686:ILE:HG12	2.17	0.44
5:E:47:TRP:NE1	5:E:49:ALA:O	2.50	0.44
1:B:284:VAL:HG21	1:B:310:TYR:CD1	2.52	0.44
1:A:41:HIS:CG	1:A:60:CYS:HB3	2.53	0.44
3:C:242:ALA:HA	3:C:252:LEU:HA	1.99	0.44
1:B:167:TYR:CD2	1:B:420:VAL:HG22	2.53	0.43
1:B:630:VAL:HG11	1:B:853:PHE:HD2	1.83	0.43
1:A:146:GLY:HA2	9:A:1107:TRP:HA	2.00	0.43
1:B:492:ILE:HD12	1:B:505:PHE:HB3	2.01	0.43
1:A:647:ASN:ND2	1:A:724:GLN:OE1	2.50	0.43
2:G:98:GLN:HG3	2:G:133:TRP:NE1	2.34	0.43
1:B:271:SER:OG	1:B:272:SER:N	2.51	0.43
1:B:477:VAL:HG13	1:B:485:LEU:HD11	2.00	0.43
1:B:734:MET:O	1:B:738:ILE:HG22	2.18	0.43
1:A:585:CYS:SG	1:A:589:PHE:HB2	2.59	0.43
1:B:268:VAL:HG22	1:B:294:LEU:HB2	2.00	0.43
2:G:38:LEU:HB2	2:G:83:MET:SD	2.59	0.43
3:C:271:CYS:SG	3:C:291:ASP:HB3	2.59	0.43
1:B:200:ILE:HG12	1:B:523:ILE:HD11	2.00	0.43
1:B:339:PRO:HD3	1:B:352:TRP:CE3	2.54	0.43
1:B:554:ILE:HG22	1:A:554:ILE:HG12	2.00	0.43
5:E:190:ARG:NH2	5:E:211:ASP:OD2	2.52	0.43
1:B:141:VAL:O	1:B:164:GLN:HA	2.19	0.43
3:C:327:VAL:O	3:C:338:ILE:HA	2.18	0.43
5:E:145:ILE:O	5:E:202:LEU:N	2.51	0.43
1:B:68:PHE:HD1	1:B:408:TYR:CE1	2.36	0.43
1:B:667:PHE:HD1	1:B:680:ARG:HA	1.84	0.43
5:E:4:LEU:HD12	5:E:110:PHE:HD2	1.83	0.43
1:B:682:PRO:HB3	1:B:739:CYS:SG	2.59	0.43
1:A:81:ILE:HG13	1:A:425:TYR:HE1	1.83	0.43
1:A:496:LEU:HD12	1:A:496:LEU:HA	1.89	0.43
1:A:752:ARG:HG3	1:A:752:ARG:NH1	2.34	0.43
1:B:185:ARG:NH2	1:B:189:ASN:HB3	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:223:ILE:HD12	1:A:223:ILE:HA	1.78	0.42
5:E:215:TYR:HE1	5:E:233:LEU:HD13	1.84	0.42
1:B:334:LEU:HD22	1:B:408:TYR:CZ	2.54	0.42
1:A:796:LYS:HB3	1:A:796:LYS:HE3	1.83	0.42
3:C:186:ASP:N	3:C:204:CYS:SG	2.92	0.42
1:B:93:LEU:HD23	1:B:93:LEU:HA	1.89	0.42
1:A:626:LEU:HD12	1:A:626:LEU:HA	1.85	0.42
2:G:187:THR:HA	2:G:190:LYS:HD2	2.01	0.42
1:B:325:GLY:HA3	1:B:418:TYR:CG	2.55	0.42
1:B:496:LEU:HD12	1:B:496:LEU:HA	1.83	0.42
1:B:655:LEU:HG	1:B:853:PHE:HE2	1.83	0.42
1:A:601:LYS:HE3	1:A:758:ASP:O	2.19	0.42
1:B:327:ILE:HB	1:B:330:PHE:HB2	2.02	0.42
1:A:551:ARG:N	1:A:566:VAL:O	2.42	0.42
1:A:686:ILE:HD13	1:A:735:GLN:HG2	2.02	0.42
4:D:23:ALA:O	4:D:27:ARG:NH2	2.52	0.42
1:A:186:THR:HG21	1:A:422:LEU:HB3	2.02	0.42
1:A:255:VAL:O	1:A:258:VAL:HG12	2.19	0.42
2:G:97:ILE:HD12	2:G:97:ILE:HA	1.92	0.42
1:A:650:LEU:HD12	1:A:650:LEU:HA	1.74	0.42
5:E:6:GLU:HA	5:E:22:CYS:HA	2.02	0.42
1:A:280:ILE:HD11	1:A:314:VAL:HG12	2.02	0.42
1:A:489:TYR:HB2	1:A:511:TYR:HB3	2.01	0.42
3:C:237:ASN:HD21	3:C:239:ASN:HB2	1.84	0.42
1:B:69:ARG:HD2	1:B:408:TYR:HA	2.02	0.41
1:B:586:PRO:HG2	1:B:589:PHE:CD2	2.55	0.41
1:A:603:ILE:CG2	1:A:604:GLU:H	2.33	0.41
3:C:142:HIS:NE2	3:C:163:ASP:OD1	2.53	0.41
1:A:627:THR:HG23	1:A:655:LEU:HD22	2.01	0.41
1:B:308:PRO:HG3	1:B:502:SER:HA	2.03	0.41
1:B:654:LEU:HB2	1:B:694:CYS:SG	2.61	0.41
1:B:752:ARG:HH21	1:B:761:ILE:HG21	1.84	0.41
1:A:39:PRO:O	1:A:67:GLY:HA3	2.20	0.41
1:A:165:VAL:HA	1:A:184:LEU:O	2.20	0.41
3:C:301:LYS:HB3	3:C:301:LYS:HE3	1.85	0.41
6:H:1:NAG:H62	6:H:2:NAG:N2	2.35	0.41
1:A:452:ILE:O	1:A:455:VAL:HG23	2.20	0.41
1:A:623:GLY:HA3	1:A:662:PHE:CE2	2.55	0.41
1:A:795:ARG:NE	1:A:796:LYS:HD3	2.35	0.41
2:G:14:GLU:O	2:G:18:MET:HG3	2.20	0.41
1:B:564:GLU:HA	1:B:564:GLU:OE2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:608:TRP:CZ3	1:B:670:GLY:HA2	2.55	0.41
1:B:806:PHE:CZ	12:B:1110:CLR:H72	2.56	0.41
1:B:151:THR:HG23	1:B:180:PHE:CE1	2.56	0.41
1:B:678:ARG:HA	1:B:748:PRO:HG2	2.01	0.41
5:E:21:SER:HA	5:E:80:PHE:HA	2.02	0.41
1:B:174:LEU:HB2	1:B:185:ARG:NH1	2.36	0.41
1:B:534:SER:OG	1:B:535:ARG:N	2.54	0.41
2:G:132:ARG:HH21	2:G:133:TRP:HE1	1.67	0.41
2:G:40:GLY:N	2:G:46:LYS:HE2	2.36	0.41
3:C:235:PHE:CZ	3:C:282:GLY:HA3	2.56	0.41
3:C:300:LEU:HD11	4:D:41:CYS:SG	2.61	0.41
1:B:118:ASN:ND2	1:B:162:ILE:HD11	2.36	0.41
1:A:118:ASN:OD1	1:A:118:ASN:N	2.52	0.41
1:A:800:ASN:OD1	1:A:800:ASN:N	2.54	0.41
3:C:237:ASN:ND2	3:C:239:ASN:HB2	2.36	0.41
3:C:270:ILE:HD13	3:C:270:ILE:HA	1.84	0.41
5:E:69:THR:O	5:E:82:GLN:N	2.51	0.41
1:B:849:LEU:HD23	1:B:850:ALA:N	2.36	0.41
1:A:782:LEU:O	1:A:786:ILE:HG13	2.21	0.41
1:B:473:MET:HB2	1:B:475:GLU:OE1	2.21	0.40
1:B:610:GLU:O	1:B:614:ILE:HG12	2.21	0.40
1:B:620:ALA:O	1:B:624:ILE:HG13	2.22	0.40
1:B:803:GLU:O	1:B:807:ILE:HG12	2.21	0.40
3:C:225:HIS:HE1	3:C:249:THR:HG23	1.86	0.40
5:E:51:ILE:HG13	5:E:58:ILE:HD12	2.03	0.40
1:B:106:LYS:HE2	1:B:106:LYS:HB3	1.93	0.40
1:B:456:GLU:HG3	1:A:54:ARG:NH2	2.36	0.40
1:B:644:LYS:HG2	1:B:648:ARG:HD2	2.03	0.40
1:A:399:GLU:OE1	1:A:399:GLU:N	2.54	0.40
1:A:451:ASP:OD2	1:A:454:LYS:N	2.54	0.40
1:A:572:GLU:OE1	1:A:584:LYS:HA	2.20	0.40
1:A:603:ILE:HG22	1:A:604:GLU:H	1.86	0.40
3:C:225:HIS:CE1	3:C:251:ARG:HE	2.39	0.40
3:C:177:THR:OG1	3:C:178:THR:N	2.54	0.40
5:E:204:ILE:HD13	5:E:207:LEU:HB3	2.03	0.40
1:B:32:ILE:HD13	1:B:431:LEU:HD13	2.04	0.40
1:B:635:ILE:O	1:B:638:ARG:HB3	2.22	0.40
2:G:35:ARG:O	2:G:104:THR:HG23	2.21	0.40
3:C:30:LEU:HD12	3:C:30:LEU:HA	1.93	0.40
3:C:43:ILE:HD13	3:C:43:ILE:HA	1.88	0.40
1:B:32:ILE:O	1:B:94:GLY:N	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:32:ILE:HG21	1:B:431:LEU:HD11	2.04	0.40
1:A:678:ARG:HD3	1:A:747:PRO:HB2	2.03	0.40
2:G:23:LEU:HD11	3:C:80:ILE:HD11	2.03	0.40
3:C:33:ILE:HD12	3:C:33:ILE:HA	1.95	0.40

There are no symmetry-related clashes.

5.3　Torsion angles ⓘ

5.3.1　Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	795/1076 (74%)	773 (97%)	22 (3%)	0	100	100
1	B	800/1076 (74%)	768 (96%)	32 (4%)	0	100	100
2	G	211/246 (86%)	202 (96%)	9 (4%)	0	100	100
3	C	339/376 (90%)	316 (93%)	23 (7%)	0	100	100
4	D	53/71 (75%)	49 (92%)	4 (8%)	0	100	100
5	E	225/297 (76%)	204 (91%)	21 (9%)	0	100	100
All	All	2423/3142 (77%)	2312 (95%)	111 (5%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2　Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	639/926 (69%)	626 (98%)	13 (2%)	55	80
1	B	632/926 (68%)	622 (98%)	10 (2%)	62	84
2	G	151/213 (71%)	145 (96%)	6 (4%)	31	65
3	C	254/307 (83%)	245 (96%)	9 (4%)	36	68
4	D	27/58 (47%)	25 (93%)	2 (7%)	13	42
5	E	155/239 (65%)	150 (97%)	5 (3%)	39	69
All	All	1858/2669 (70%)	1813 (98%)	45 (2%)	51	76

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	37	LEU
1	B	150	SER
1	B	271	SER
1	B	425	TYR
1	B	469	PHE
1	B	688	PHE
1	B	733	PHE
1	B	751	TYR
1	B	766	HIS
1	B	775	PHE
1	A	66	ARG
1	A	109	GLU
1	A	118	ASN
1	A	275	ASP
1	A	545	ASP
1	A	612	PHE
1	A	629	PHE
1	A	665	SER
1	A	693	SER
1	A	707	GLU
1	A	751	TYR
1	A	788	PHE
1	A	809	PHE
2	G	20	ASP
2	G	148	LEU
2	G	208	ARG
2	G	209	HIS
2	G	211	CYS
2	G	233	ASP
3	C	22	ARG

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Mol	Chain	Res	Type
3	C	44	GLN
3	C	66	ASP
3	C	103	CYS
3	C	105	TYR
3	C	218	CYS
3	C	262	MET
3	C	292	PHE
3	C	340	ASN
4	D	24	ASN
4	D	29	LYS
5	E	17	SER
5	E	22	CYS
5	E	23	SER
5	E	72	ARG
5	E	168	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	735	GLN
1	A	802	ASN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

5.4　Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5　Carbohydrates ⓘ

4 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z|>2	Counts	RMSZ	#|Z|>2
6	NAG	F	1	6,1	14,14,15	0.29	0	17,19,21	0.41	0
6	NAG	F	2	6	14,14,15	0.21	0	17,19,21	0.47	0
6	NAG	H	1	6,1	14,14,15	0.25	0	17,19,21	0.44	0
6	NAG	H	2	6	14,14,15	0.24	0	17,19,21	0.44	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	F	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	F	2	6	-	0/6/23/26	0/1/1/1
6	NAG	H	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	H	2	6	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	H	2	NAG	O5-C5-C6-O6
6	F	1	NAG	O5-C5-C6-O6
6	F	1	NAG	C4-C5-C6-O6
6	H	2	NAG	C4-C5-C6-O6
6	F	1	NAG	C8-C7-N2-C2
6	F	1	NAG	O7-C7-N2-C2

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	H	1	NAG	4	0
6	F	1	NAG	1	0
6	H	2	NAG	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

Oligosaccharide Chain H

Bond lengths | Bond angles | Torsions | Rings
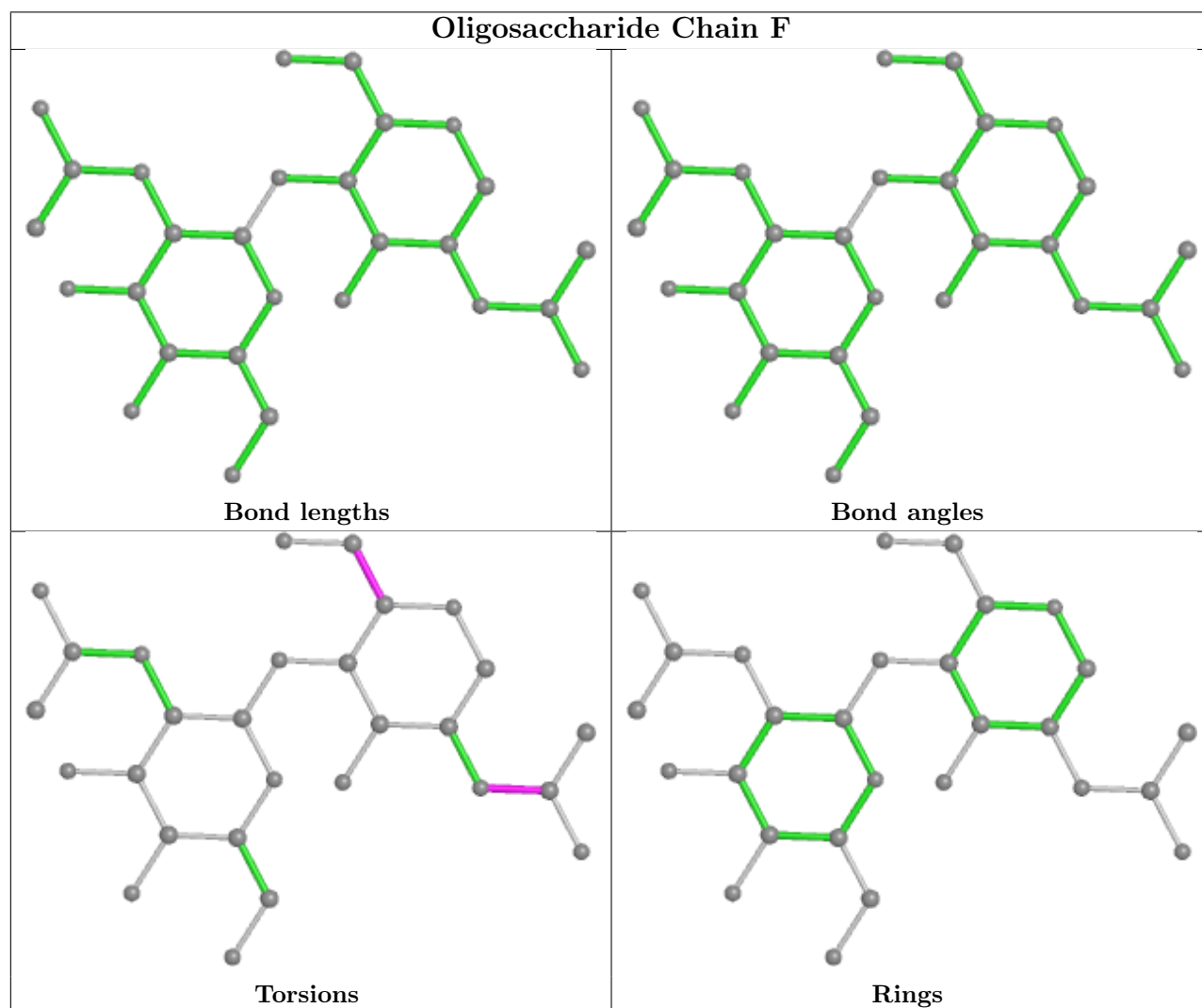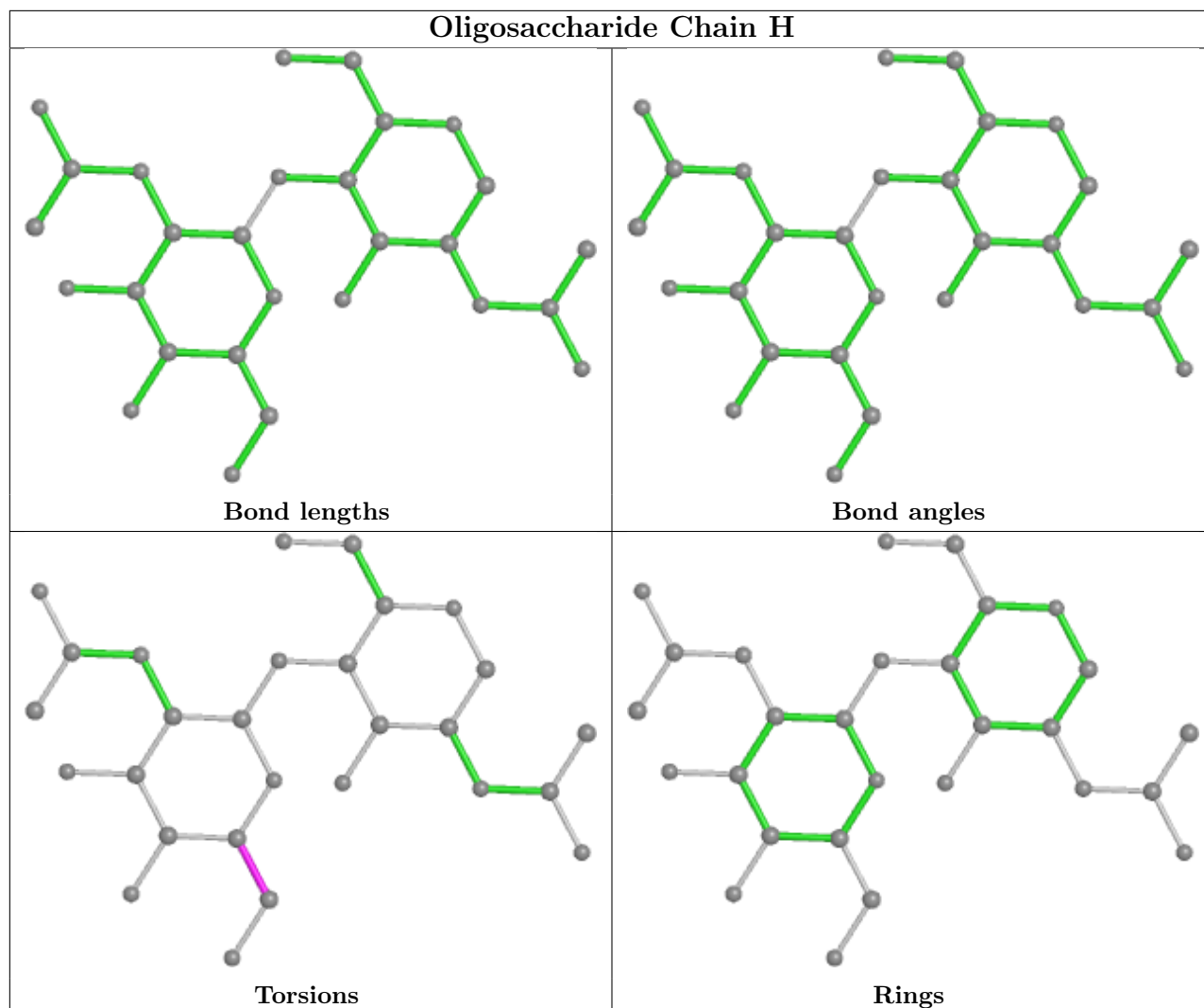
5.6 Ligand geometry ⓘ

Of 20 ligands modelled in this entry, 4 are monoatomic - leaving 16 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
7	NAG	A	1104	1	14,14,15	0.25	0	17,19,21	0.48	0
7	NAG	A	1106	1	14,14,15	0.71	1 (7%)	17,19,21	0.80	0
8	YP4	B	1105	-	28,28,28	0.60	0	38,39,39	0.76	1 (2%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
7	NAG	A	1103	1	14,14,15	0.20	0	17,19,21	0.40	0
7	NAG	A	1105	1	14,14,15	0.18	0	17,19,21	0.43	0
9	TRP	A	1107	-	14,16,16	0.87	1 (7%)	16,22,22	1.16	2 (12%)
8	YP4	A	1110	-	28,28,28	0.59	0	38,39,39	0.73	0
7	NAG	A	1102	1	14,14,15	0.23	0	17,19,21	0.54	0
7	NAG	B	1101	1	14,14,15	0.20	0	17,19,21	0.45	0
7	NAG	B	1104	1	14,14,15	0.95	1 (7%)	17,19,21	1.22	1 (5%)
11	PO4	B	1109	-	4,4,4	0.97	0	6,6,6	0.41	0
7	NAG	B	1102	1	14,14,15	0.21	0	17,19,21	0.41	0
12	CLR	B	1110	-	31,31,31	0.37	0	48,48,48	0.94	4 (8%)
11	PO4	A	1109	-	4,4,4	0.97	0	6,6,6	0.43	0
9	TRP	B	1106	-	14,16,16	0.89	1 (7%)	16,22,22	1.14	2 (12%)
7	NAG	B	1103	1	14,14,15	0.22	0	17,19,21	0.43	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	NAG	A	1104	1	-	0/6/23/26	0/1/1/1
7	NAG	A	1106	1	-	3/6/23/26	0/1/1/1
8	YP4	B	1105	-	-	7/17/17/17	0/3/3/3
7	NAG	A	1103	1	-	1/6/23/26	0/1/1/1
7	NAG	A	1105	1	-	2/6/23/26	0/1/1/1
9	TRP	A	1107	-	-	2/7/8/8	0/2/2/2
8	YP4	A	1110	-	-	4/17/17/17	0/3/3/3
7	NAG	A	1102	1	-	1/6/23/26	0/1/1/1
7	NAG	B	1101	1	-	0/6/23/26	0/1/1/1
7	NAG	B	1104	1	-	4/6/23/26	0/1/1/1
7	NAG	B	1102	1	-	1/6/23/26	0/1/1/1
12	CLR	B	1110	-	-	9/10/68/68	0/4/4/4
9	TRP	B	1106	-	-	3/7/8/8	0/2/2/2
7	NAG	B	1103	1	-	2/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	B	1104	NAG	O5-C1	3.32	1.49	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1106	NAG	O5-C1	-2.46	1.39	1.43
9	A	1107	TRP	OXT-C	-2.31	1.23	1.30
9	B	1106	TRP	OXT-C	-2.20	1.23	1.30

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	1104	NAG	C1-O5-C5	4.81	118.70	112.19
12	B	1110	CLR	C16-C17-C13	-2.80	100.47	103.84
9	B	1106	TRP	OXT-C-O	-2.70	117.95	124.09
9	A	1107	TRP	OXT-C-O	-2.69	117.98	124.09
12	B	1110	CLR	C14-C8-C9	2.41	112.32	109.09
9	A	1107	TRP	OXT-C-CA	2.19	120.86	113.38
12	B	1110	CLR	C10-C9-C8	-2.18	109.46	112.73
12	B	1110	CLR	C16-C17-C20	2.14	115.46	112.15
8	B	1105	YP4	C10-C9-C8	-2.09	118.56	120.76
9	B	1106	TRP	OXT-C-CA	2.04	120.34	113.38

There are no chirality outliers.

All (39) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	B	1105	YP4	C1-CA-N-C3
8	B	1105	YP4	CB-CA-N-C3
8	A	1110	YP4	C4-C3-N-CA
8	A	1110	YP4	C1-CA-N-C3
8	A	1110	YP4	CB-CA-N-C3
9	B	1106	TRP	CA-CB-CG-CD1
12	B	1110	CLR	C13-C17-C20-C21
7	B	1103	NAG	O5-C5-C6-O6
12	B	1110	CLR	C16-C17-C20-C21
12	B	1110	CLR	C13-C17-C20-C22
7	A	1105	NAG	C4-C5-C6-O6
12	B	1110	CLR	C16-C17-C20-C22
7	B	1104	NAG	C4-C5-C6-O6
7	B	1103	NAG	C4-C5-C6-O6
7	B	1104	NAG	O5-C5-C6-O6
7	A	1105	NAG	O5-C5-C6-O6
7	B	1104	NAG	C8-C7-N2-C2
7	B	1104	NAG	O7-C7-N2-C2
7	A	1103	NAG	O5-C5-C6-O6
12	B	1110	CLR	C20-C22-C23-C24

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Mol	Chain	Res	Type	Atoms
8	A	1110	YP4	N-C3-C4-C5
7	A	1106	NAG	O5-C5-C6-O6
9	B	1106	TRP	C-CA-CB-CG
9	A	1107	TRP	C-CA-CB-CG
12	B	1110	CLR	C22-C23-C24-C25
7	B	1102	NAG	O5-C5-C6-O6
12	B	1110	CLR	C17-C20-C22-C23
12	B	1110	CLR	C21-C20-C22-C23
9	B	1106	TRP	N-CA-CB-CG
9	A	1107	TRP	N-CA-CB-CG
12	B	1110	CLR	C23-C24-C25-C26
7	A	1102	NAG	C3-C2-N2-C7
7	A	1106	NAG	C1-C2-N2-C7
8	B	1105	YP4	N-CA-CB-C14
8	B	1105	YP4	C1-CA-CB-CG
8	B	1105	YP4	C1-CA-CB-C14
8	B	1105	YP4	N-CA-CB-CG
8	B	1105	YP4	C3-C4-C5-C6
7	A	1106	NAG	C3-C2-N2-C7

There are no ring outliers.

4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	A	1104	NAG	1	0
9	A	1107	TRP	1	0
12	B	1110	CLR	2	0
11	A	1109	PO4	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand YP4 B 1105

Bond lengths

Bond angles

Torsions

Rings

Ligand YP4 A 1110

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR B 1110

Bond lengths

Bond angles

Torsions

Rings
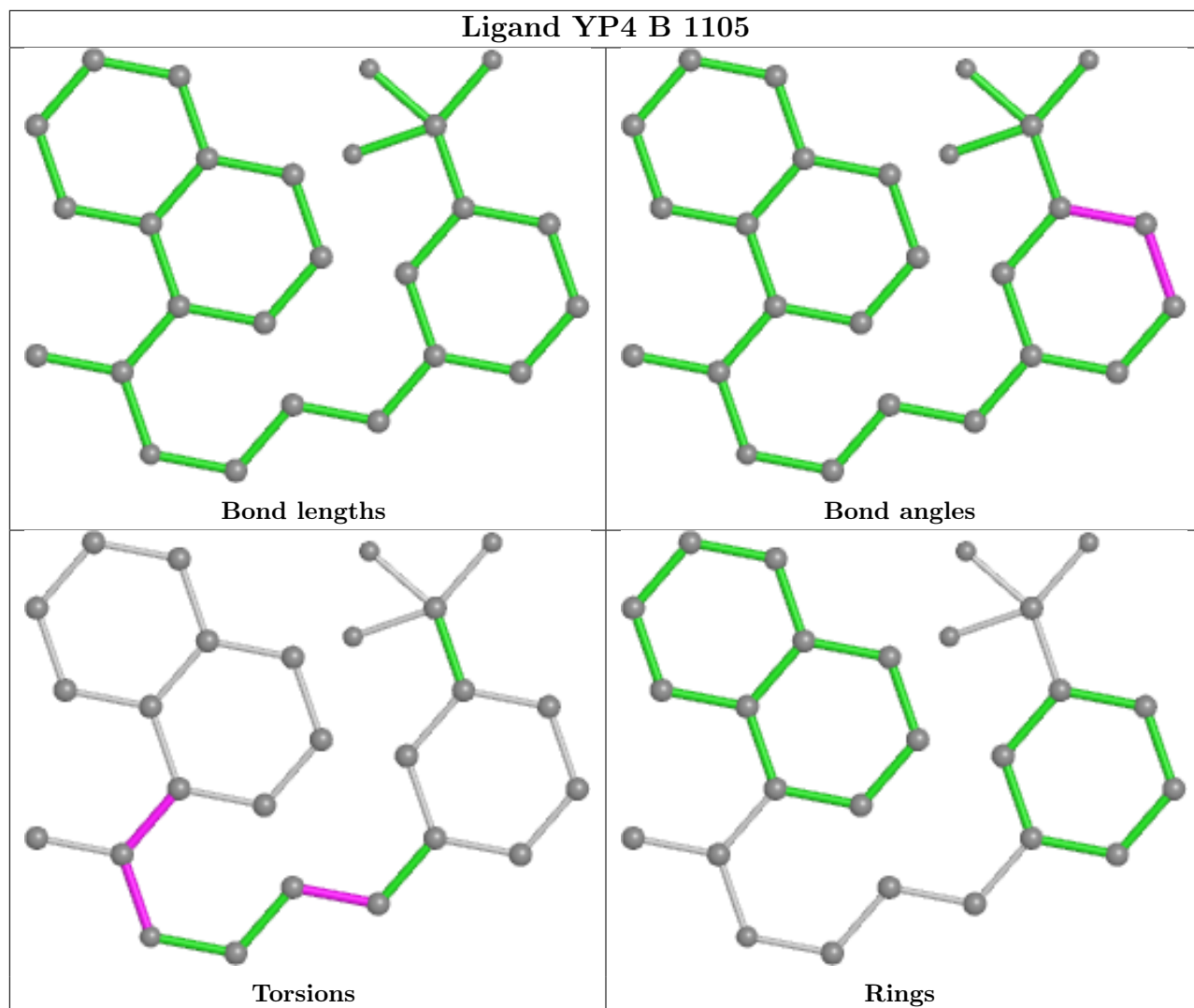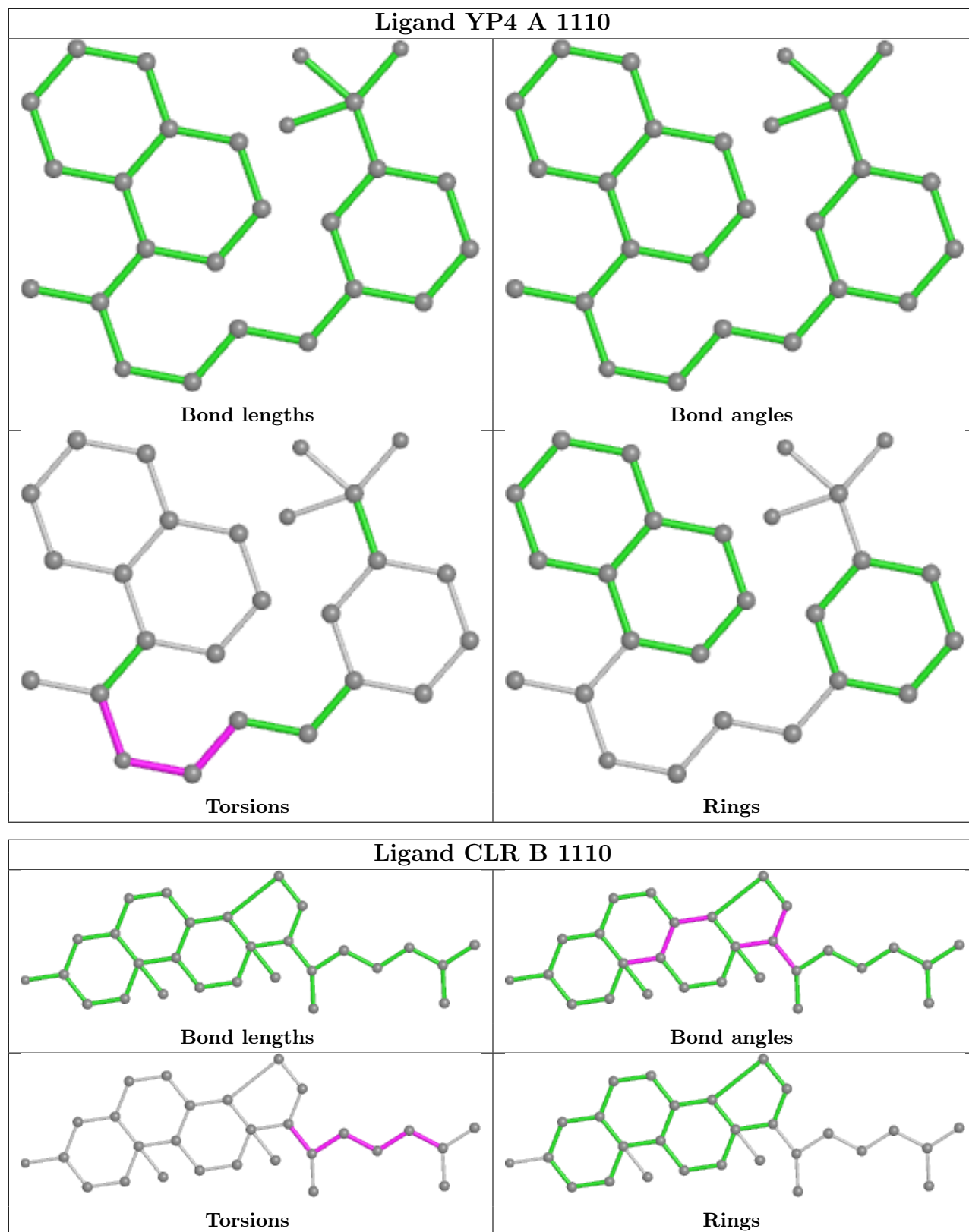
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-37724. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1　Orthogonal projections ⓘ

6.1.1　Primary map

| X | Y | Z |
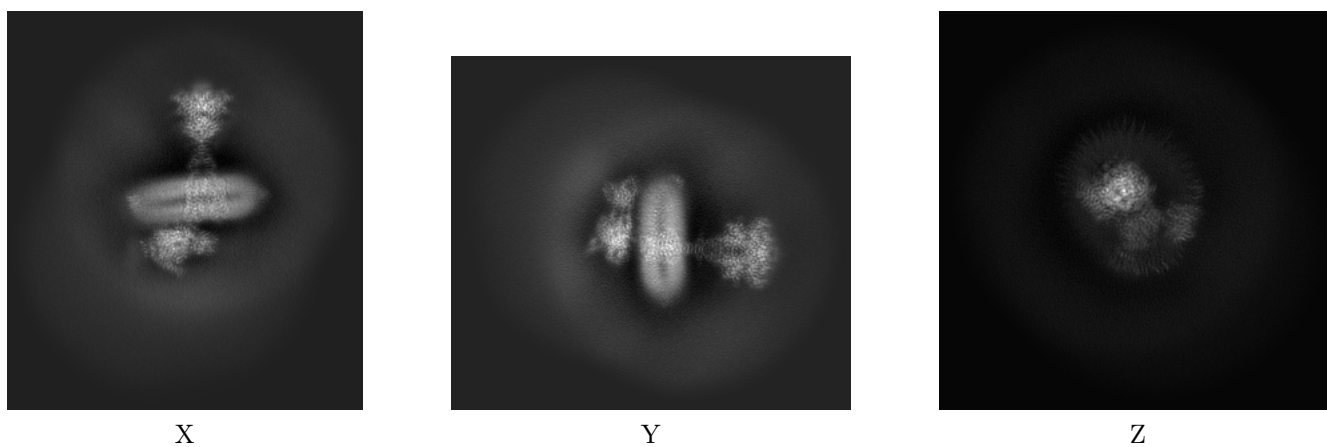
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ

6.2.1　Primary map

| X Index: 200 | Y Index: 201 | Z Index: 226 |
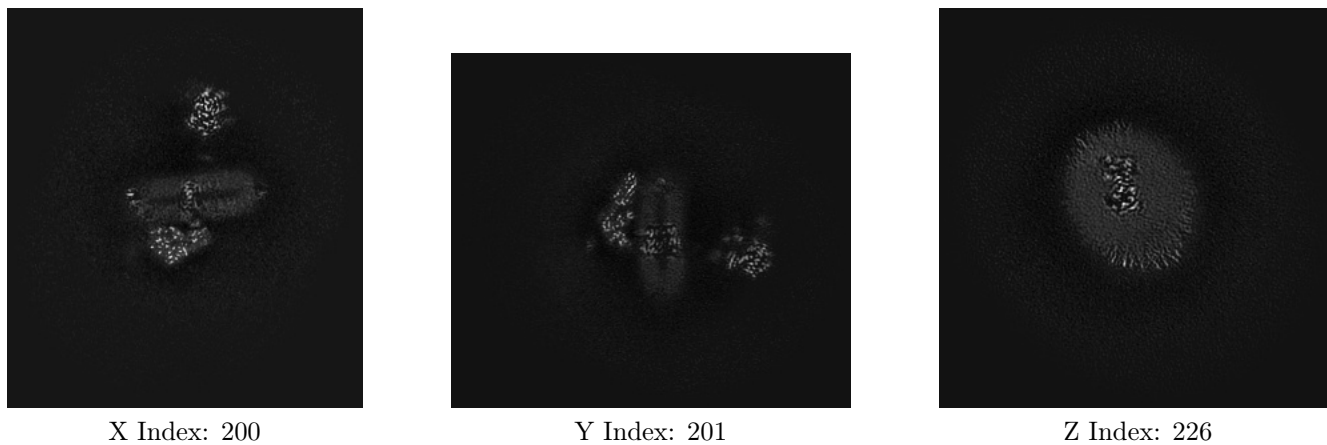
The images above show central slices of the map in three orthogonal directions.

6.3　Largest variance slices ⓘ

6.3.1　Primary map
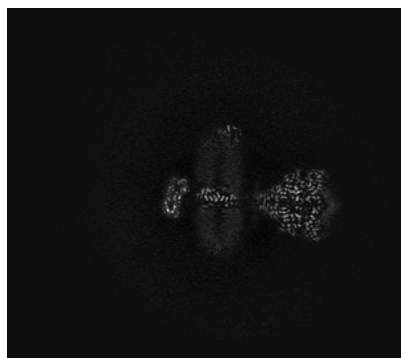
| X Index: 186 | Y Index: 220 | Z Index: 190 |
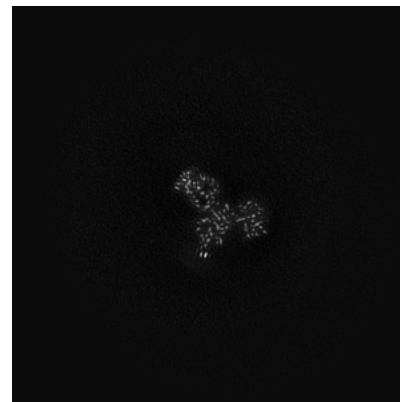
The images above show the largest variance slices of the map in three orthogonal directions.

6.4　Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1　Primary map

| X | Y | Z |
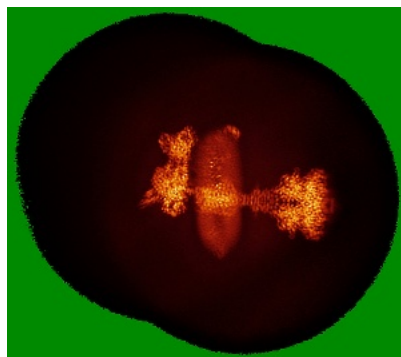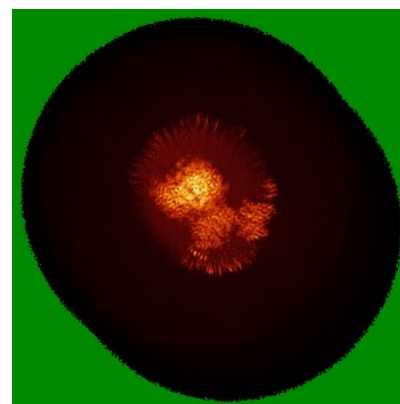
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
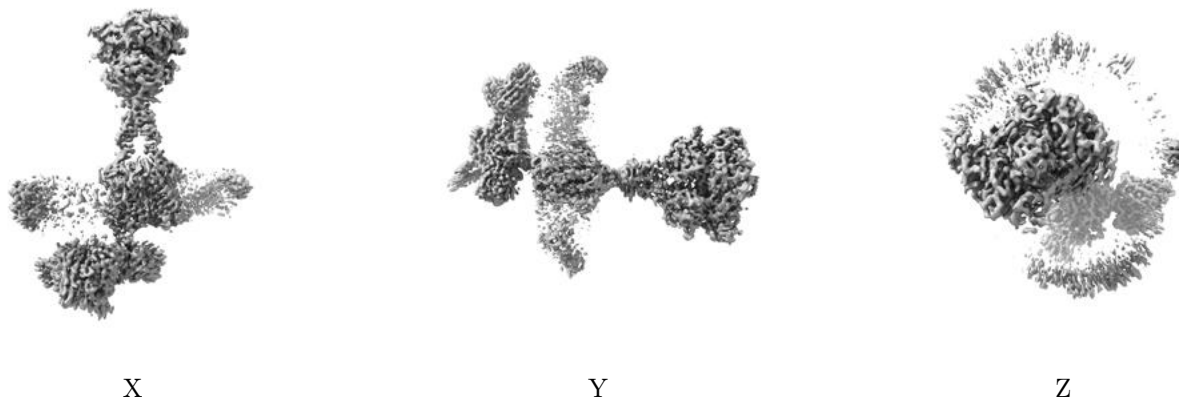
The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation ⓘ

This section was not generated. No masks/segmentation were deposited.

7 Map analysis ⓘ

This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ
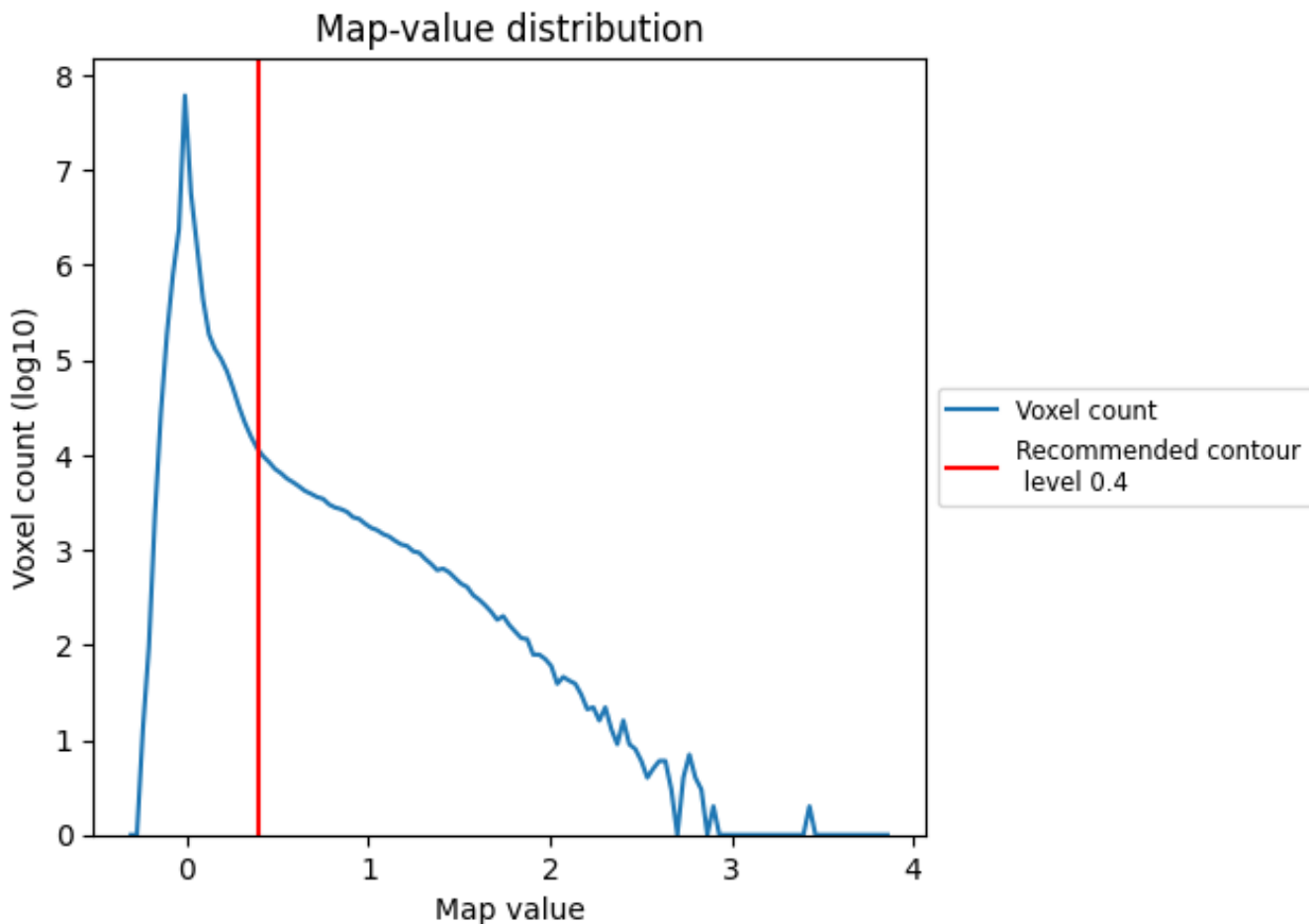
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
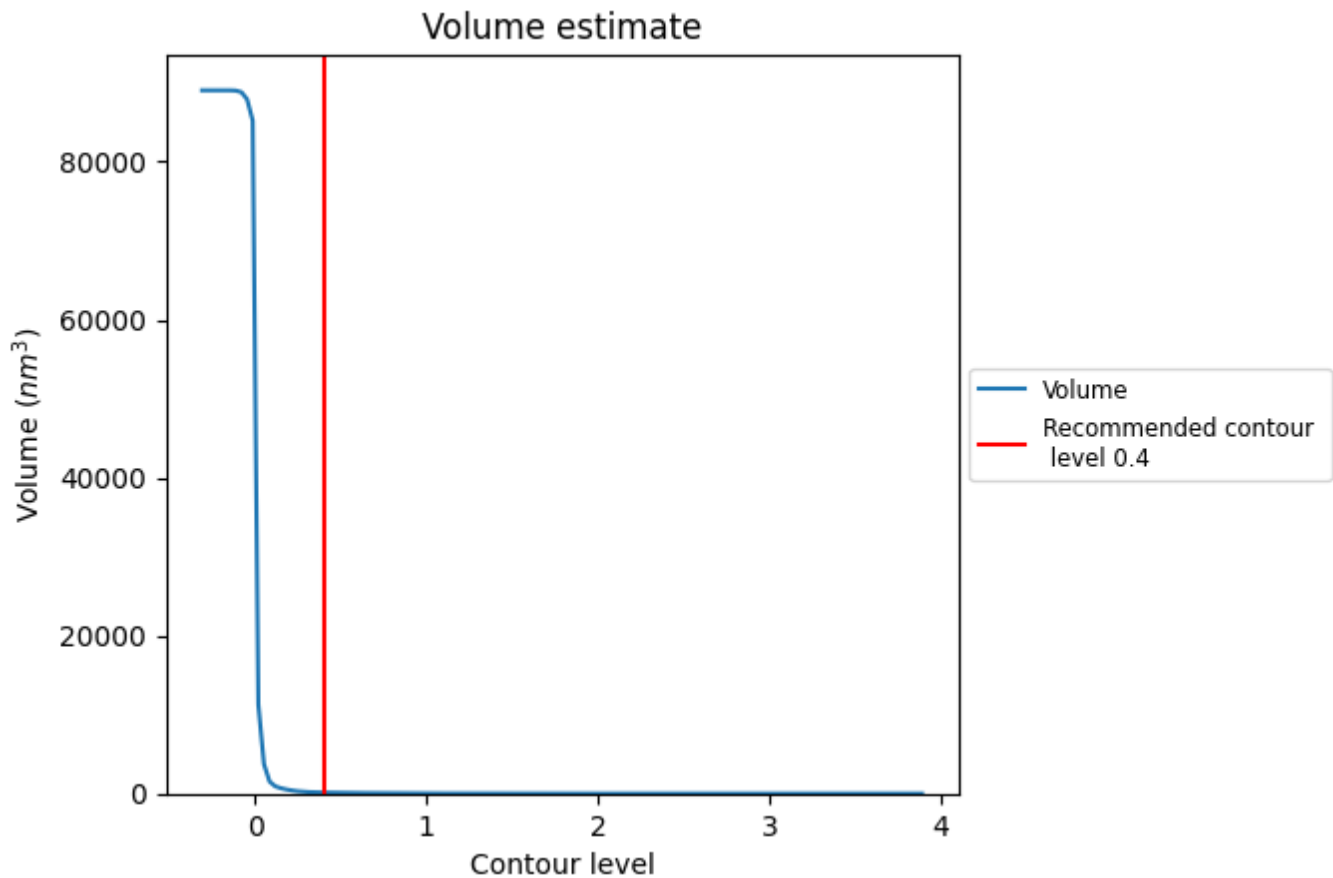
The volume at the recommended contour level is 129 nm^3; this corresponds to an approximate mass of 117 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

8   Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-37724 and PDB model 8WPU. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay (i)

| X | Y | Z |
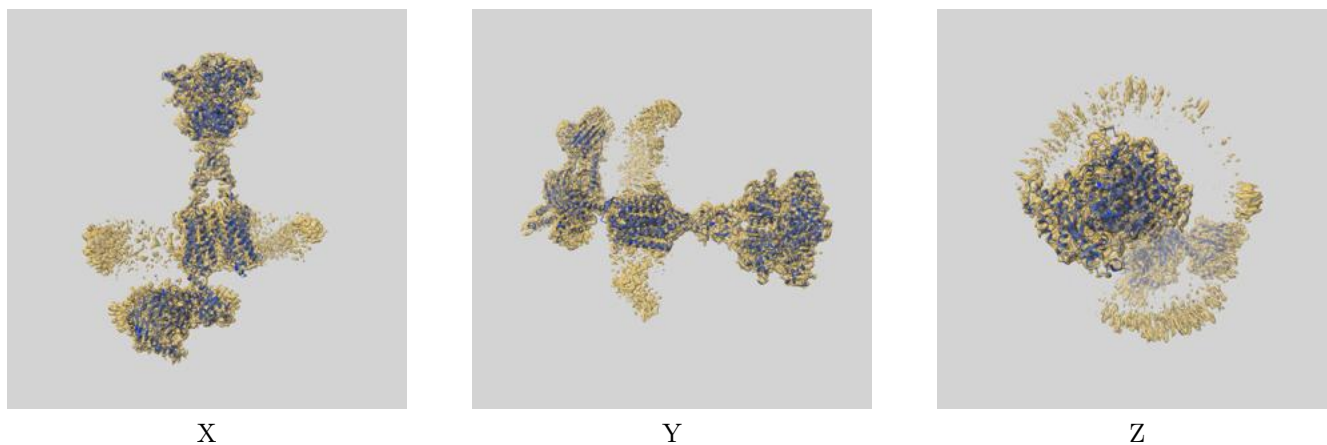
The images above show the 3D surface view of the map at the recommended contour level 0.4 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X Y Z
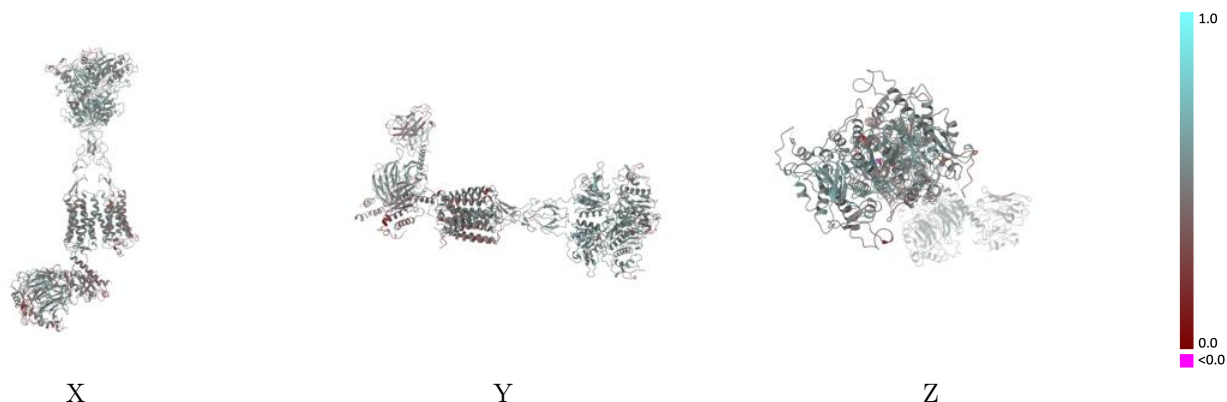
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model ⓘ

X Y Z
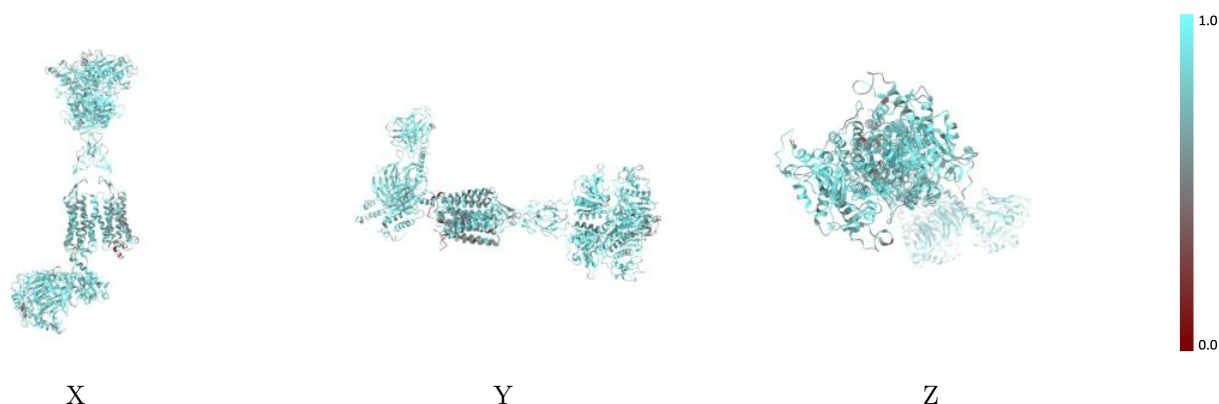
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.4).

9.4 Atom inclusion ⓘ
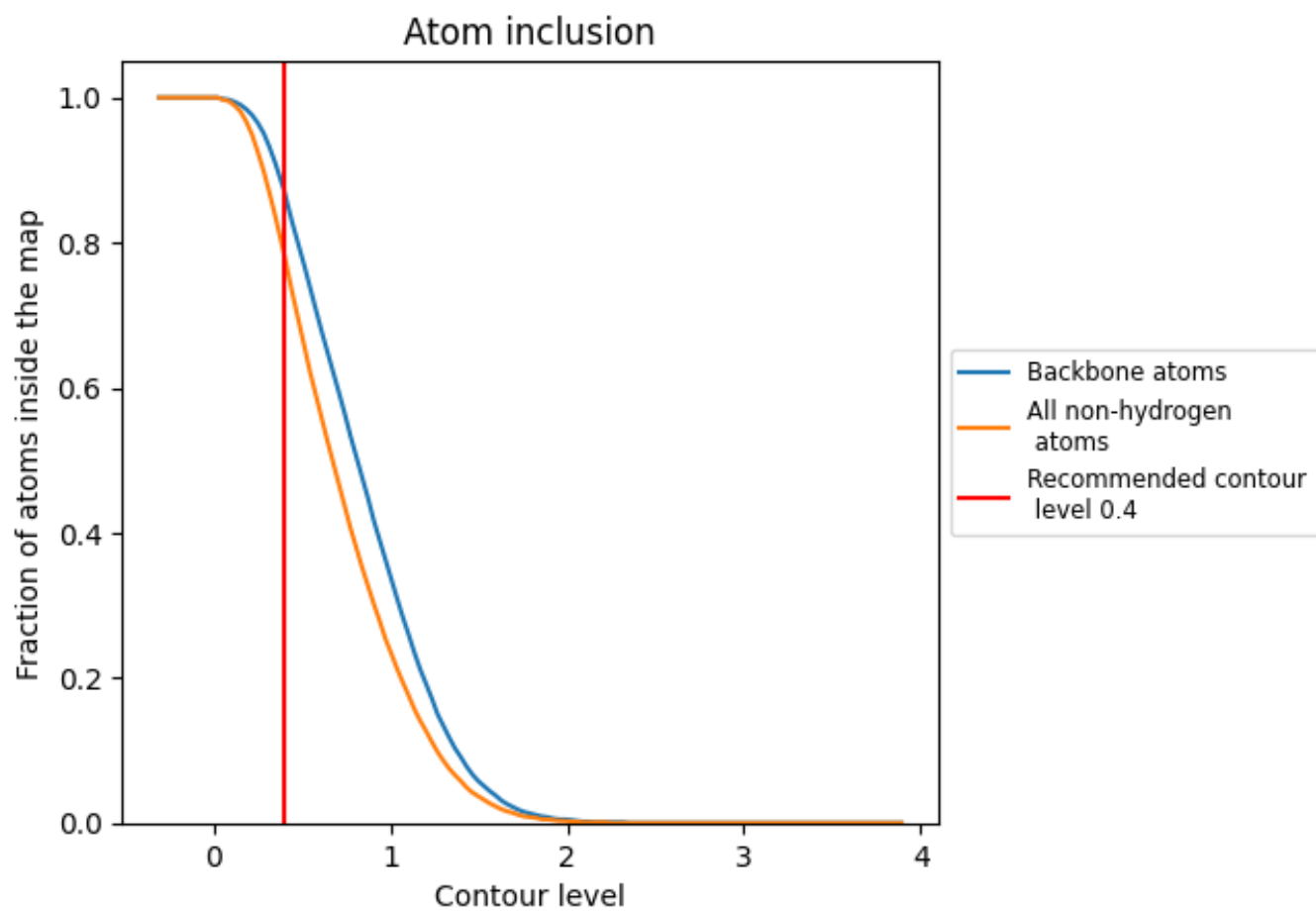
Atom inclusion

At the recommended contour level, 87% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7830	0.4900
A	0.7890	0.5090
B	0.7600	0.4880
C	0.8240	0.5050
D	0.7790	0.4710
E	0.8000	0.4590
F	0.6430	0.4860
G	0.7720	0.4340
H	0.6790	0.4560

1.0

0.0
<0.0